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ABSTRACT

Canada's experience with national health insurance is examined from 1971, when a comprehensive first-dollar coverage system of benefits began in the Province of Quebec, until 1975. The study defines medical market areas in the province and asks questions about the effect of the Quebec insurance plan on the distribution of physicians, the supply of physicians, how physicians organize their practices and the composition of physician output (possible changes in hours worked or availability of appointments), the use of physician services, and cost. Economic models and statistical techniques are used to examine complicated issues such as the significance of a fixed fee schedule for physician reimbursement which prevailed in Quebec during the beginning years of national health insurance. The analyses provide policy options in the United States for influencing physician distribution. (Author/MSE)

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NCHSR

RESEARCH DIGEST SERIES

Responses of Canadian Physicians to the Introduction of Universal Medical Care Insurance: The First Five Years in Quebec

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Mathematica Policy Research
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Abstract

The objective of this study was to determine the effects of universal and comprehensive physician insurance on (a) physicians' location and practice mode and on (b) the organization and behavior of physicians' private practices. Claims files of the Quebec Health Insurance Board as well as other national and provincial data sources were used. In cooperation with the Federation of General Practitioners of Quebec, a telephone survey of a stratified random sample of the general practitioners in the province (1900) was conducted to obtain current data on their practices, such as wages for staff, physicians' hours spent in providing primary care, etc. Geographical units within the province were delineated in an effort to ascertain mobility and location of physicians. Sixty-five of these medical market areas were defined. Economic models and appropriate statistical methods were used to analyze the data in relation to the physician supply, physician mobility, utilization of services and cost.

This *NCHSR Research Digest* was prepared by Charles Berry, J. Alan Brewster, Philip J. Held, Barbara H. Kehrer, Larry M. Manheim and Uwe Reinhardt of Mathematica Policy Research, Inc., Princeton, New Jersey. Mr. Held was Principal Investigator, and Mr. Brewster was Project Director. The study was supported by NCHSR contract (numbers HRA 230-75-0166 and HRA 230-75-0167).

The full report of the study may be purchased under the same title, from the National Technical Information Service, Springfield, VA 22161 (tel.: 703/557-4650), and may be ordered in either paper or microfiche using the following order numbers: PB 286 032, Volume I, Final Report and Executive Summary; PB 286 053, Volume II, Technical Appendices. The Computer Data Tapes may be ordered as PB 294 661, and PB 294 662.

Additional copies of this Digest may be obtained on request from the NCHSR Publications and Information Branch, Room 7-44, 3700 East-West Highway, Hyattsville, MD 20782 (tel.: 301/436-8970). Current NCHSR publications are listed in the back of this publication.

The views expressed in this publication are those of the authors, and no official endorsement by the National Center for Health Services Research is intended or should be inferred.

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Foreword

Enlightenment is achieved at times less painfully through observation than experience. The protracted debate on national health insurance has allowed researchers and public policymakers more time for systematic observation of experiences with health insurance plans in other countries. Our neighbor, Canada, has a considerable store of knowledge on this topic. This study taps that knowledge.

The study covers the period from 1971, when a comprehensive first-dollar coverage system of benefits began in the Province of Quebec, until 1975. It defines medical market areas in the province and asks questions about the effect of the Quebec insurance plan on the distribution of physicians; the supply of physicians; how physicians organize their practices and the composition of physician output, e.g., have changes been made in hours worked or availability of appointments; the use of physician services; and, it also examines cost. Economic models and statistical techniques have been used to tease out complicated and intricate issues such as the significance of a fixed fee schedule for physician reimbursement which prevailed in Quebec during these beginning years of national health insurance. The analyses provide insight into policy options in the United States for influencing physician distribution. Understanding the impact of the components of a national health insurance plan on physician behavior and consumer behavior is essential to designing an effective National Health Insurance (NHI) plan.

This study could not have been executed so capably without the competent and cordial assistance of the Régie de l'assurance-maladie du Québec and the Fédération des Médecins Omnipraticiens du Québec. We appreciate their participation with the contractor, Mathematica Policy Research, Inc., in carrying out this study.

This is an acutely abridged version of the study and summarizes the findings succinctly. The publication is intended to help researchers and others concerned with the development of policy related to national health insurance programs.

Gerald Rosenthal, Ph.D.
Director

February 1980

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Background

National health insurance has been an issue of continuing debate in the United States since President Truman first proposed it in 1948. Since that time a number of alternative forms of national health insurance have been proposed, and the Carter Administration has made the development of such a program a priority item on its agenda of domestic programs. The current high level of interest in national health insurance makes understanding the possible effects of such a program very important.

In an effort to contribute to this understanding, the U.S. Department of Health, Education, and Welfare contracted with Mathematica Policy Research (MPR) to conduct a study of the responses of physicians in Canada to the introduction of universal medical care in Canada between 1968 and 1972. Under the Canadian Medical Care Act, each provincial government was responsible for implementing its own insurance plan, and considerable variations occurred among the provinces. In order to focus the research effort, therefore, the project concentrated on a single province, Quebec, from the introduction of the Quebec Health Insurance Plan in November 1970 through 1975. Quebec was selected for a number of reasons, particularly because its provincial plan offered access to extensive data files on all health insurance claims filed during this period, and because the population of the province is large and diverse. Quebec is geographically the largest province of Canada, with the second largest population. It contains both large urban areas, such as Montreal, the most populous city in Canada, and large rural areas.

The predominant source of ambulatory medical care in Quebec, as in the United States, is the private fee-for-service physician working in solo practice or in a small partnership. In addition, prior to the introduction of the Quebec Health Insurance Plan, medical insurance coverage was relatively limited in the province, by comparison to the other Canadian provinces. Therefore, the introduction of universal medical care insurance in Quebec should have had a greater relative impact on the demand

for physicians' services in Quebec than in the other provinces. As a result, the responses of the Quebec physicians to these changes should have been greater and more readily observed. All of these factors made Quebec Province the choice for study.

The Quebec health plan covers all residents of Quebec and is administered by the Quebec Health Insurance Board (La Regie de l'assurance-maladie du Quebec), a provincial agency. The plan is financed in part by contributions from employees and employers and in part by the federal government of Canada.

The benefits provided by the plan include all medically required services provided by physicians; oral surgery provided by dental surgeons on an inpatient basis; and services provided by optometrists. Since 1972, the plan also has covered drugs for certain categories of persons receiving public assistance and dental services for children. The plan provides coverage for virtually all of Quebec's six million residents.

The Quebec Plan pays medical professionals on a fee-for-service basis. These fees are determined as part of the periodically renegotiated agreement between the Quebec Minister of Social Affairs and each of the bodies representing the general practitioners, medical specialists, oral surgeons, dentists, and optometrists in the province. During the entire five-year period examined in this study, the fee schedule remained fixed. Virtually all physicians in the province participated in the plan.

Objectives

The introduction of universal medical care insurance in Quebec Province brought about major changes in the environment in which physicians practiced. The universal coverage of the Quebec Health Insurance Plan enabled a significant portion of the population which had previously been limited in their ability to pay for medical services to compete for access to medical services on an equal financial footing with the rest of the people in the province. Because the Quebec Health Insurance Plan also does not impose any copayments on patients for services received, it was expected that neither physicians nor patients could bargain over the price nor increase fees to limit them. Similarly, patients could not obtain priority treatment by paying higher prices.

These significant changes in the economic setting in which medicine was practiced in Quebec after November 1, 1970, set in motion incentives which were likely to generate a response on the part of physicians in terms of the supply of services they deliver.

The basic objectives of this research project were to learn how physicians responded to these changes and what effect their responses had on the delivery of services to the people of Quebec.

Two underlying assumptions were made in this study. First, it was assumed that the introduction of universal health insurance in Quebec brought about an overall increase in the level of demand for medical services throughout the province. Second, this increase in overall demand was assumed to be distributed unequally across the population according to the extent of prior health insurance coverage. Given these assumptions, the overall hypothesis to be tested was that physicians faced with these changes in demand would respond in a variety of ways to alter the quantity, mix, and distribution of the supply of services they would provide. The various forms that this response might take, which were investigated in this study, included: changes in the decisions made by physicians about the location of their medical practices; changes in hours worked and the extent of use of staff and equipment; and alterations in the mix of patients seen and types of services provided.

Data sources

In order to investigate these issues, MPR specified and obtained a number of large data files from the claims files of the Régie de l'assurance-maladie du Québec (Régie), covering the entire period from the start of the plan in 1970 through 1975. In addition, MPR, in cooperation with the Fédération des Médecins Omnipraticiens du Québec (Federation of General Practitioners of Quebec), conducted a survey of general practitioners throughout the province in the spring of 1977.

These basic data files were obtained from the Régie, two of which were based on the entire population of physicians in the province. One file contained specific information on basic characteristics of all physicians in the province during the period 1971–1975, including specialty, age, medical school, location, and quarterly revenues. A second file contained counts by physician of the number of selected procedures performed by physicians in each of four selected calendar quarters since the start of the Quebec Health Insurance Plan.

The third data file obtained from the Régie contained records on samples of individual beneficiaries of the plan. For each of three complete years, samples of individuals in specific age-sex categories were selected, and records were created which con-

tained all services received by these individuals during a given year.

The data collected in a May 1977 telephone survey of general practitioners in the province included information about the time a physician spends in various practice activities, the use of aides, wait times to an appointment, and numbers of patients seen.

Definition of medical areas in Quebec

The issues addressed in this study required the definition of geographic units of observation which were smaller than the province as a whole. The issues of physician mobility and location within the province required the capability of defining location in a logical and precise manner. Of equal importance was the need to define the environment within which an individual physician practiced in such terms as the size of the population to be served, the demographic and economic characteristics of that population, and the number of other physicians working in the area.

The problem of choosing the appropriate geographic units is one which has been faced in numerous previous studies. These choices have often been dictated by the availability of data, and the geographic units chosen have not necessarily been the theoretically most desirable for the purposes at hand. In the current project, MPR chose to construct a discrete set of market areas for physician services which were not constrained by the large political subdivisions of the Province of Quebec.

The market area of interest was defined to be the market for the provision of primary medical care services. Market areas were constructed around recognized clusters of physicians and medical facilities. Market area boundaries were drawn taking into account distances from these clusters of physicians, access to roads, and physical barriers such as mountains and rivers. In this manner, a total of 65 medical service market areas were defined.

Tests of the defined market areas were conducted by examining the frequency with which individual patients obtained primary medical care within the market area in which they lived. This examination demonstrated the basic validity of the 65 market areas defined for purposes of primary medical care.

Summary of major findings

The distribution of physicians

During the period 1971–75, the ratio of active physicians to population in Quebec increased at an average annual compound rate of 7 percent, approximately seven times the comparable growth rate in the United States. Graduations from Quebec medical schools contributed 45 percent of this growth. About 23 percent was contributed by foreign-trained medical graduates, another 24 percent by Quebec-trained physicians hitherto not active in direct patient care (or at least not active in the first year of the plan), and about 8 percent by medical schools elsewhere in Canada.

The number of active GPs in Quebec increased relatively more rapidly than did the number of specialists, a trend not found in the United States. As a result, the percentage of GPs among *all* active physicians in Quebec increased from 39 percent in 1971 to 41 percent in 1975.

The rapid increase in the physician-population ratio brought with it a commensurate increase in the use of physician services per beneficiary. Total payments for physician services per capita (at a constant fee schedule) rose from $45 in 1971 to $66 in 1975; that is, at an average annual compound rate of 11 percent. Total payments per active physician rose at an annual rate of about 3 percent.

The rather sharp increase in the overall supply of physicians in Quebec does not appear to have had a marked impact on the *relative* geographic distribution of physicians. The number of *all* active physicians per capita was unevenly distributed across market areas in both 1971 and 1975. Although a comparison of the distributions of physicians and population suggests a slight secular movement toward greater equality in the distribution of physicians, it is fair to say that the *relative* geographic distribution of physicians in 1975 was basically similar to that in 1971.

In terms of absolute numbers of physicians per capita, almost all market areas experienced some positive growth during the

period. Areas in which the physician-population ratio actually declined tended to be rural areas experiencing secular decline in population. Relatively more rapid growth in the ratio tended to occur in suburbs of the larger cities, although several rural areas also experienced above-average growth. Large urban centers did not register above-average growth in physicians per capita.

An analysis of physicians' locational choices suggests that, other things being equal, the average gross payment for general practitioners (GP)s in an area tends to exert a positive effect on the migration of GPs, although the *magnitude* of the estimated effect appears to be sensitive to the specification of the model. The migration pattern for specialists was much less tractable.

Coincident with the relocation of physicians was the substantial reduction in the differentials in payments per physician in rural and urban areas. For GPs in rural areas, the 11 percent higher payments in 1971 were reduced to zero by 1975. For specialists, a comparable difference was reduced to 4 percent by 1975.

Practice organization

An analysis of GP practices in Quebec revealed a marked difference between the typical medical practice in Quebec and its U.S. counterpart. GPs in Quebec appear to employ only about a third as many aides per physician as do U.S. GPs. Although they appear to work roughly as many hours per week and year as their U.S. colleagues, they spend substantially more time per patient visit at the office and therefore see only about 60 percent as many patients per hour or week as do their American colleagues. Finally, the average number of days wait for an appointment with a GP in Quebec appears to exceed the comparable U.S. figure by 60 to 100 percent.

Possible explanations as to why Quebec GPs employ fewer aides than their U.S. counterparts include Quebec GPs' not usually operating laboratories in their practices and the fairly simple billing procedures of the Quebec insurance system. In addition, the fee schedule and rules requiring physician presence during performance of a service apparently discourage delegation of medical tasks to auxiliary personnel.

Within Quebec there is substantial variation among physicians in such variables as hours worked per week, weekly and hourly patient visits, and aides employed per physician. While an analysis of variance indicates that market area is statistically significant

in "explaining" these differences, it is difficult to discern any systematic pattern among market area averages of the variables.

In the United States, the hourly and weekly rates of patient visits handled by physicians tend to vary inversely with relative physician density. Such a pattern is not nearly as discernible in Quebec. If market areas are grouped in terms of relative physician density, there is no discernible difference in weekly patient visits, nor are there systematic differences in other practice variables. If one controls more carefully for an entire set of factors thought to affect weekly visit rates, physician density does appear to have a positive impact on weekly visits (other things being equal), although this association is quite weak. In other words, the data suggest that physicians in areas with relatively few physicians per capita give their patients just as much time per office visit as do physicians in areas with relatively high physician density.

In comparison with U.S. GPs, relatively more Quebec GPs belong to group medical practices. A production-function analysis of physicians' weekly office visits suggests that, other things (practice inputs) being equal, group practitioners in Quebec would tend to see about 9 percent more patients per hour or week than would solo practitioners with identical practice inputs. In actuality, group practitioners in Quebec appear to have fewer inputs; they employ significantly fewer aides per physician than do solo GPs, and the *actual* average weekly office visit rate for GPs in groups is somewhat higher than that reported by solo GPs. An economic evaluation of the production-function estimates supports the conclusion that solo GPs in Quebec employ more aides, on average, than would seem to be required to maximize net income. The analysis suggests that, given the technology of medical practice in Quebec, and given the wages and fee schedule faced by physicians at the time of the telephone survey, the economically optimal number of aides per full-time equivalent physician is actually less than one full-time equivalent aide, a figure consistent with the actual number of aides employed by physicians overall.

Composition of physician output

An analysis of the changes in the configuration of physician output over the period 1971–75 shows that average quarterly gross payments (for January-March) per active GP in Quebec rose by 13.4 percent, or 3.2 percent per year, while that of general sur-

geons rose by only about 2 percent, or 0.5 percent per year. Since average annual gross payments to *all* physicians over the period grew at an annual rate of about 3 percent, the relatively rapid increase in the physician-population ratio during this period did not depress the average gross income of the representative (average) physician in Quebec.

There appears to have been, however, a discernible shift in the composition of physician output. For both general practitioners and general surgeons,the average number of patient visits and consultations per physician *decreased* by roughly 5 percent per year, while total gross payments per visit or consultation *increased* commensurately. In other words, there appears to have been a discernible shift towards more resource-intensive patient visits over the period. There also appears to have been a marked shift from ordinary examinations to the more costly complete and major complete examinations. There was not, however, a substantial shift in the priority of surgical procedures. The performance of lower priority surgical procedures as a proportion of total payments declined for both GPs and general surgeons.

An analysis of the effects of time and of market area variables on aggregated and disaggregated levels of physician output showed that, controlling for a variety of market area variables thought to influence the level and composition of output, total payments to GPs for all services and total payments for all visits *increased* by 15 to 20 percent, respectively, during the period 1971–75, while total visits per GP decreased by 9 percent. In 1971, total payments and visits to GPs tended to decrease with average household income in the physician's market area, other things being equal; by 1975, the sign of this relationship appears to have been reversed.

Finally, other things being equal, the effect of relative physician density in a market area on the level and mix of physician output was found to be generally minor. Although physician density does appear to have some negative effect on output and payments per physician, the conclusion seems warranted that the dollar value of output per physician remained relatively constant as the number of physicians in a market area increased. This conclusion emerges from the analysis of physician gross payments over time (with rapidly increasing overall physician-population ratio) and the analysis of physician payments across market areas at any point in time.

Such maintenance of total output (and payment) levels in the face of increasing physician-population ratios implies commensurate increases in physician services rendered per capita.

Medical utilization per capita (all services)

A closer examination of physician services per capita was conducted by analyzing medical utilization for selected age-sex groups among beneficiaries (males between the ages of five and eight, and females between the ages of fifty-eight and sixty-one). These per capita utilization rates were related to market area characteristics—for example, physician density and area mean household income—and to the income status of the individual beneficiary. The results of this analysis reveal that, for a wide range of physician services, the chronically poor were already receiving substantially more services per capita than were the nonpoor in 1971–72. This situation does not appear to have changed over the period 1971–75.

While the per capita utilization of surgical procedures increased as the number of physicians per capita increased (at less than one to one), there were no substantial shifts in the composition of these surgical procedures towards lower priority surgical procedures.

After controlling for the income status of beneficiaries within an area, it was found that beneficiaries in higher income areas often increased their utilization of physician services at a faster rate then did beneficiaries from lower income areas. Thus, the Quebec health insurance system does not appear to have effected a *relative* redistribution of medical services from high-income to low-income areas. It may have done so shortly after the introduction of Quebec Medicare, but since then the trend, if there is a real trend, has been more in the opposite direction.

Note, however, that in terms of the *absolute* number of services per beneficiary, virtually all market areas show substantial improvement over the period 1971–75. This increase, it will be recalled, attended the substantial growth in the physician-population ratio almost everywhere in Quebec.

Medical utilization per capita (essential hypertension)

The analysis of utilization included a more narrowly focused study of a subset of beneficiaries who had been diagnosed as suffering from hypertension. In many respects, the results parallel the patterns of overall utilization reported above, but there were also some differences.

For the subset of hypertensive beneficiaries, it was found that low-income beneficiaries, once again, received relatively more services per year than do nonpoor individuals, and they also re-

ceive more revisits per year. This was true, holding constant, among other things, beneficiary age, sex, location, and a proxy measure of health status. Costs per patient year were relatively higher if the physician was a specialist rather than a GP.

As was reported above, total cost per visit has increased significantly over time for all groups of beneficiaries. Similar cost increases were found for hypertensive visits.

An analysis of annual visits and costs per beneficiary across market areas suggests that relative physician density does not have a pronounced effect on either cost per patient year or the revisit rate. The GP-population ratio of a market area does appear to have a *small* positive effect on both annual visits and costs. On the other hand, the specialist-population ratio appears to exert a negative influence on both variables, other things being equal.

Further analysis showed that the higher cost per patient year for low-income hypertensives was decreasing during 1971–75, compared with that for non-low-income beneficiares. This result differs from the general utilization of all medical care, as reported above, wherein the differences between low-income and non-low-income persons remained relatively unchanged between 1971 and 1975.

Although beneficiaries with essential hypertension residing in high-income areas (holding family income constant) tended to have higher costs (and services) per year than did beneficiaries in low-income areas, the difference did not appear to increase over time. In other words, contrary to the general utilization results, when examining utilization for one specific diagnostic condition, it does not appear that persons in high-income areas increased their relative utilization compared with beneficiaries in low-income areas.

Concluding observations

The preceding analysis suggests the following conclusions about Quebec Medicare and the implications for the United States.

1. The Quebec Medicare system appears to be approaching one of the main objectives normally posed for a universal health insurance program: reasonably uniform access to medical care across income and location groups. This conclusion is based on four observations of the Quebec health system:

a. Although the relative geographic distribution of medical manpower in Quebec is far from uniform, one does not find quite the disparities in physician-population ratios (physician density) that are observed in the United States. Indeed, the evidence suggests that access to general practitioners in Quebec is distributed almost evenly throughout the province. GPs deliver the bulk of primary health care in Quebec. Medical specialists are less evenly distributed, but they undoubtedly would be under any ideal distribution of medical manpower.

To what extent Medicare per se can be credited with the present distribution of medical manpower is an open question. A relative uniformity in the distribution is apparent as early as 1971 (the first year of universal health insurance) and must, therefore, be rooted in the pre-Medicare period. But it probably can be claimed that, under Quebec Medicare, adherence to a uniform fee schedule for both GPs and specialists throughout the province has served to encourage the further development of a geographic and specialty distribution of physicians that is generally thought, by American health analysists, to be more conducive to adequate and economical health care than is the current physician distribution in the United States.

b. We noted that the rate at which U.S. physicians see patients in their offices tends to increase systematically and rather sharply with decreases in physician-population ratio. Some analysts view this phenomenon as an attempt on the part of the physicians to compensate for a relative lack of medical manpower by enhanced physician productivity. Others have argued

that the higher visit rates in low-density areas reflect primarily an attempt by physicians to maintain a satisfactory hourly revenue stream in the face of fees that typically are low in low-density areas. Whatever the case may be, there is the question—not satisfactorily answered so far—whether the relatively high hourly visit rates in low-density areas represent *bona fide* gains in physician productivity or merely a deterioration in the quality of the visit.

It is apparent from the present study that hourly visit rates in Quebec do not vary systematically with physician density, as in the U.S. On the average, these visit rates are roughly the same in high and low physician density areas. To be sure, there is considerable variation around these averages within and among market areas, but patients in relatively undersupplied areas do not appear to receive relatively hasty physician visits.

c. Analysis of physician services received by beneficiaries indicates that realtively poor individuals have, on average, received *more* physician services per capita than have higher-income groups.[1] This differential is observed throughout the period 1971–75. Although the disparity appears to have diminished somewhat over time, it can be said that the elimination of financial barriers through Quebec Medicare has served to provide the poor with access to physician care (as the Medicare/Medicaid programs have done for the poor and elderly in the United States). Whether the care now received by Quebec's poor is sufficient to meet their needs—or perhaps even excessive—is, of course, a question that cannot be answered within the present study. Nor can this study shed any light on the degree of beneficiaries' satisfaction with their health care delivery system—their feelings about the still relatively long average wait times to an appointment with a physician (that is, relative to the United States), or about the quality of the care they receive.

d. Analysis of the movement and location patterns of general practice physicians has shown that GPs have been moving in a manner so as to reduce differences between areas in payments per physician. In 1971, nonmetropolitan GPs were receiving 11 percent higher payments than were urban GPs. By 1975 this difference was eliminated. Since these differences are a likely reflection of differences in demand per physician,

[1] Recent data for the United States exhibit a similar pattern.

the movement toward equality in payments per physician is likely to equalize the level of unmet demand between areas.

2. The physician-population ratio in Quebec has been rising rapidly, albeit at different rates in different market areas, without depressing average gross payments[1] per physician at constant fee levels. Total cost of the Medicare program per beneficiary and total services received have risen commensurately. This phenomenon is consistent with the theory that physicians can and do create demand for their services in response to increases in the physician-population ratio. At the same time, the phenomenon is also consistent with the hypothesis that Quebec Medicare, which provides first-dollar coverage for physician services led to large increases in patient demand for medical care, and that the increased utilization was merely the result of physicians fulfilling that demand. That the average wait time to an appointment with a physician in Quebec is 60 to 100 percent higher than in the United States could be adduced as some support for the latter view.

We believe that the general increase in utilization per capita and per physician in Quebec is consistent with either view: that is, physician-induced demand and/or movement along a downward-sloping demand curve. This project has not been able to distinguish between these two hypotheses.[2] In either case, however, we believe that a universal health insurance system which has both fee-for-service and first-dollar coverage can control aggregate costs only by controlling the number of physicians providing patient care. The Quebec experience suggests that the level of utilization can grow without many natural limits as long as physicians are available and patients have little disincentive not to see the physician.

3. In a fee-for-service medical system with zero copayment by the patient, the definition of medical procedures and the enforcement of the rules governing billing for such procedures are very important items in controlling program costs. Before adopting such a system, considerable effort should be expended on this practical issue. It should not be left to chance, nor should existing fee schedules be adopted without close scrutiny.

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[1]Real (price deflated) gross and net income per physician has, however, fallen in Quebec and elsewhere in Canada.

[2]The results for the treatment of hypertension may be one limited exception. Although it is not valid to generalize to all medical care from this narrowly defined analysis, the results suggest that the effect the physician has on demand may be small.

In Quebec, we observed a substantial shift over time from ordinary office examinations to the more expensive complete and major complete examinations. Judging the desirability or benefits of this shift, which in all likelihood represented more patient care, is beyond the scope of this project. But the relative ease of upgrading the mix of types of visits produced by the physician suggests that the control and specification of such categories of visits is important in the control of the overall program costs.[1]

4. Another indication of the significance of the fee schedule in understanding and controlling a universal health insurance plan is provided by the evidence that physicians may well be more rational economic men than is commonly believed. It appears that the observed number of aides employed by Quebec GPs, which is only one-third as great as the number employed by U.S. GPs, is economically efficient, given the *fee schedule* wages of aides, and the apparent technology of office practice. Therefore, how physicians respond to universal health insurance is likely to be determined, at least in large part, by the fee schedule. For example, the application of rules which require a physician to be present when a service is performed may reduce physician productivity below that which is required by appropriate medical standards. Another example of the effect of the fee schedule on physician behavior is the already cited effect that a uniform fee schedule (across specialties and areas) may have had in the observed redistribution of physicians in the province.

While it has not been a subject of analysis in this study, these observations regarding the role of the fee schedule as an incentive mechanism suggest that the prices applied to various procedures should approximate as closely as possible the true economic costs of providing such procedures. In all likelihood, if the price applied to a procedure is greater (or less) than the economic value of that procedure, then an incentive is provided to the physician to perform (or not to perform) such procedures. While medical ethics and other criteria will enter into physicians' decisions regarding appropriate treatment, the direction and magnitude of financial incentives to physicians should be considered in setting fee schedules. Again, this means that setting of fees should not be

[1]We note two additional comments regarding the classification of visits. First, we understand that the Regie and the physicians' professional organizations in Quebec have implemented significant changes already in this area. Second, approximately 18 percent of the increase in program costs from 1971 to 1975 appears to be due to the move toward performing complete and major complete exams rather than ordinary exams. Thus, the upgrading of visits does represent a substantial portion of the increase in program costs.

left to chance and even the mere extrapolation of various relative-value scales should be studied for their appropriateness.

5. The number of physicians providing patient care is not likely to be a fixed function of the number of physicians in the society. The proportion of the physician stock which chooses to provide patient care may vary as a function of alternative opportunities, which are likely to be affected by the fee schedule and the insurance plan. For example, the proportion of the total physician stock providing patient care appears to have increased after the inception of universal health insurance in Quebec.

In Quebec and in the United States, there are substantial numbers of physicians who are semi-active or inactive as far as direct patient care activities are concerned. (In Quebec they may be inactive only in the choice of billing procedures.) Therefore, the number of medical services (and physicians) available to a society, while constrained in the upper limit by the total number of physicians, may have substantial variability downward. Therefore, the responsiveness of the patient care physician supply to alternative financial incentives should be considered in determining policy. For example, if a policy of remunerating physicians with an annual salary is considered, what criteria will be applied to determine eligibility? If the salary is relatively high, the patient care physician supply is likely to increase, even if the total number of physicians is fixed. If the salary is relatively low, the supply of patient care physicians may shrink.

6. The observed movement of general practitioners to areas in Quebec where payments per GP are relatively high suggests that financial incentives may provide policy options for affecting the distribution of physicians. These policy options may provide substantially more efficient and sensitive instruments for manpower policy, in areas of physician scarcity, as compared with other proposals that border on conscription.

7. The lack of pronounced shifts toward lower priority surgery in Quebec in the face of dramatic increases in the supply of physicians suggests that physicians may not be as fast to hospitalize patients for discretionary reasons as is frequently alleged.[1]

8. It seems reasonable to conclude that the careful division of Quebec into as many as 65 distinct and relatively small market areas has been analytically useful for describing primary medical

care delivery areas. The present study indicates that the technique applied is feasible for primary care, but that the hierarchical system for more complex services should be recognized in analyzing the markets for such services as hospital care and specialists. Apparently travel outside the primary medical delivery area to receive more specialized care is common.

9. The present study has shown that useful insights can be drawn from an analysis of the operational data routinely produced by a fee-for-service insurance system. Indeed, the information content of these data can, and often are, cited as one advantage of a fee-for-service reimbursement system under national health insurance. A very likely question two or three years after inception of national health insurance in the U.S. will be: What was the impact and benefit? Serious attention should be given to the issue of how such research questions will be pursued. The Quebec experiment suggests that the large continuous intact data file is very useful in performing such analysis.

10. The Quebec Medicare system demonstrates the technical and fiscal feasibility of a universal health insurance system providing first-dollar coverage for beneficiaries on the one hand, and fee-for-service reimbursement of physicians on the other. It also proposes to demonstrate the merits of an administratively simple system and of uniform fee schedules throughout large geographic areas and among specialties, although this point is open to alternative interpretations.

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[1]Since the study did not analyze hospital behavior, another possible explanation is that Quebec hospitals already have an effective monitoring system, although anecodotal evidence suggests that this is not the case. If further investigation reveals the lack of an effective hospital monitoring system in Quebec regarding reasons for hospitalization, the observation of only a small or no shift toward low priority surgery in Quebec between 1971–1975 suggests that the need or benefit of peer review or other forms of hospital admission review may be overstated.

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16. Abstracts

The objective of this study was to determine the effects of universal and comprehensive physician insurance on (a) physicians' location and practice mode and on (b) the organization and behavior of physicians' private practices. Claims files of the Quebec Health Insurance Board as well as other national and provincial data sources were used. In cooperation with the Federation of General Practitioners of Quebec, a telephone survey of a stratified random sample of the general practitioners in the province (1900) was conducted to obtain current data on their practices, such as wages for staff, physicians' hours spent in providing primary care, etc. Geographical units within the province were delineated in an effort to ascertain mobility and location of physicians. Sixty-five of these medical market areas were defined. Economic models and appropriate statistical methods were used to analyze the data in relation to the physician supply, physician mobility, utilization of services and cost.

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